REMARKS

Claims 1-15 were examined. Claims 12 and 13 were allowed. Claims 1-11, 14 and 15 were rejected. Claims 1-15 are unchanged. Claims 1-15 remain pending in this application.

Applicant notes the Examiner has allowed claims 12 and 13.

The Examiner has rejected claims 1-11, 14 and 15 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,559,996 (Miyamoto). Applicant respectfully traverses this rejection.

Independent claim 1 recites:

> A digital data modulator, comprising:
> a source of a digital data signal;
> an encoder, for encoding the digital data using a variable pulse width code;
> a pulse signal generator, generating respective pulses representing edges of the encoded digital data signal; and
> a carrier signal generator, for generating a carrier signal having carrier pulses corresponding to the respective pulses.

Independent claims 5 and 6 were originally dependent from claim 1, but were rewritten in independent form incorporating all the limitations of claim 1. Claims 5 and 6, thus, include the same recitations. Method claim 14 contains corresponding recitations.

Independent claim 8 recites:

> A digital data demodulator, comprising:
> a source of a modulated signal, having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal;
> a detector for generating a variable pulse width encoded signal in response to received carrier pulses;
> a decoder for decoding the variable pulse width encoded signal to generate the digital data signal.

Method claim 15 contains corresponding recitations.

Miyamoto does not disclose a digital data modulator including an encoder, for encoding the digital data using a variable pulse width code, nor a carrier signal generator, for generating a carrier signal having carrier pulses corresponding to transitions in the encoded digital data signal, as is recited in independent claims 1, 5, 6 and 14. Miyamoto also does not disclose a digital data

demodulator including a source of a modulated signal having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal, nor a detector for generating a variable pulse width encoded signal in response to received carrier pulses, nor a decoder for decoding the variable pulse width encoded signal to generate the digital data signal, as is recited in independent claims 8 and 15.

Instead, Miyamoto discloses a system for transmitting data over a fiber optic link. Miyamoto discloses five embodiments of such a system. The first embodiment, illustrated in Figures 1-9 and described in the associated written description (col. 7, lines 37-57, col. 9, line 20 to col. 11, line 37), is the embodiment most like that of the present invention. Referring to Figure 1, Miyamoto discloses a digital data optical modulator including a source 14, 14' of a fixed pulse width non-return-to-zero (NRZ) digital data signal (col. 9, lines 23-26), and an encoder 1, 1' for encoding the digital data (col. 9, lines 27, 28). Figure 3 illustrates the waveforms for the modulator illustrated in Figure 1 (col. 9, lines 53-54). The top line in Figure 3 illustrates the input digital signal. The second line in Figure 3 illustrates the coded electrical signal. In the code disclosed in Miyamoto, a "1" in the input digital signal is encoded as a transition in the encoded signal, and a "0" in the input digital signal is encoded as no-transition in the encoded signal. Because the input digital signal is encoded by the presence or absence of a transition in the encoded signal, and not the time location of transitions in the encoded signal, the coded digital signal is encoded using a fixed pulse width code.

Referring again to Figure 1, a bandpass filter 2, 2' generates pulses representing edges of the encoded digital data signal. The output signal from the bandpass filter is a tri-level signal having a central level, a pulse of one level representing leading edge transitions and a pulse of the other level representing trailing edge transitions (col. 9, lines 31-35). The bandpass filtered signal in Miyamoto is referred to as a differentiated signal, even though no differentiator is disclosed. Instead, the bandpass filter 2, 2' is disclosed as being implemented by a short circuited ¼ wavelength stub at the clock frequency, or by a conventional bandpass filter (col. 11, lines 5-9). Referring again to Figure 3, the third line illustrates this tri-level pulse signal. A light intensity modulator 4 generates a light signal in an optical fiber in the form of light pulses corresponding to the pulses from the bandpass filter 2, 2' (col. 9, lines 35-43). Referring again to Figure 3, these pulses are illustrated on the fourth and fifth lines in which the fourth line illustrates the timing of the optical pulses, and the fifth line represents the relative phase of the optical signal.

Applicant respectfully points out that for a reference to anticipate a claim, that reference must disclose every limitation recited in that claim. As described above, Miyamoto does not disclose a digital data modulator including an encoder, for encoding the digital data using a variable pulse width code, nor a carrier signal generator, for generating a carrier signal having carrier pulses corresponding to the respective pulses, as is recited in independent claims 1, 5, 6 and 14. For that reason, independent claims 1, 5, 6 and 14 are deemed allowable over Miyamoto. For the same reasons given above with respect to claims 1 and 6, claims 2-4, ultimately dependent from and further defining the invention recited in claim 1; and claim 7, dependent from and further defining the invention recited in claim 6, are deemed allowable over Miyamoto. However, applicant makes the following comments on the indicated claims.

Claim 2, dependent from claim 1, recites in pertinent part, "... the variable pulse width code is a variable aperture code." Because Miyamoto does not disclose a variable pulse width code, it cannot disclose that the variable pulse width code is a variable aperture code, as recited in claim 2. For this reason, claim 2 is deemed allowable over Miyamoto.

Claim 3, dependent from claim 1, recites in pertinent part, "... the carrier signal generator generates a carrier pulse having a first phase in response to a positive pulse and having a second phase in response to a negative pulse." Because Miyamoto does not disclose a carrier signal generator, it cannot disclose that the carrier signal generator generates a carrier pulse having a first phase in response to a positive pulse and having a second phase in response to a negative pulse, as recited in claim 3. For this reason, claim 3 is deemed allowable over Miyamoto.

Claim 4, dependent from claim 3, recites in pertinent part, "... the first phase is substantially 180 degrees out of phase with the second phase; said first edge is a leading edge; and said second edge is a trailing edge." Because Miyamoto does not disclose a carrier signal generator which generates a carrier pulse having a first phase in response to a positive pulse and having a second phase in response to a negative pulse, it cannot disclose that the first phase is substantially 180 degrees out of phase with the second phase; said first edge is a leading edge; and said second edge is a trailing edge, as recited in claim 4. For this reason, claim 4 is deemed allowable over Miyamoto.

Independent claim 5 recites in pertinent part, "... the pulse signal generator comprises: a differentiator, coupled to the encoder; and a level detector, coupled to the differentiator."

Miyamoto discloses the pulse generator to be a short circuited ¼ wavelength stub at the clock frequency, or a conventional bandpass filter. Miyamoto, therefore, does not disclose the pulse generator to be a differentiator and level detector. For this reason, claim 5 is deemed allowable over Miyamoto.

Independent claim 6 recites in pertinent part, "... the carrier signal generator comprises: a carrier oscillator; and a mixer, having a first input terminal coupled to the pulse signal generator and a second input terminal coupled to the carrier oscillator." Because Miyamoto does not disclose a carrier signal generator, it cannot disclose that the carrier signal generator includes a carrier oscillator; and a mixer, having a first input terminal coupled to the pulse signal generator and a second input terminal coupled to the carrier oscillator, as recited in claim 6. For this reason, claim 6 is deemed allowable over Miyamoto.

Claim 7, dependent from claim 6, recites "The modulator of claim 6 further comprising a bandpass filter coupled to an output terminal of the mixer." Because Miyamoto does not disclose a carrier signal generator which includes a carrier oscillator; and a mixer, having a first input terminal coupled to the pulse signal generator and a second input terminal coupled to the carrier oscillator, it cannot disclose that the modulator further includes a bandpass filter coupled to an output terminal of the mixer, as recited in claim 7. For this reason, claim 7 is deemed allowable over Miyamoto.

For the reasons given above, claims 1-8 and 15 are deemed allowable over Miyamoto. The Examiner is respectfully requested to reconsider and withdraw these rejections.

Figure 6 of Miyamoto illustrates a transmission system including the transmitter illustrated in Figure 1 coupled to a receiver through a fiber optic line 12. The receiver consists of an attenuator 9 and a receiver 13. The attenuator 9 restricts the amplitude of the received light signal (col. 10, lines 65-67). The receiver 13 re-generates the NRZ digital data signal and a corresponding clock signal (col. 10, line 67 to col. 11, line 2). Miyamoto states, "The structure and operation of a receiver are conventional, and do not constitute a part of the present invention" (col. 11, lines 2-4).

As described above with respect to Figures 1 and 3, the modulator of Miyamoto does not encode the digital data signal using a variable pulse width code and does not disclose generating a

carrier signal having carrier pulses corresponding to transitions in the variable pulse width encoded digital signal. Thus, Miyamoto cannot disclose a demodulator being responsive to a source of a modulated signal, having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal, as is recited in claims 8 and 15. Because Miyamoto does not disclose any details of the receiver, or demodulator, it cannot disclose that the demodulator includes a detector for generating a variable pulse width encoded signal in response to received carrier pulses and a decoder for decoding the variable pulse width encoded signal to generate the digital data signal, as is recited in claims 8 and 15.

Because Miyamoto does not disclose a detector for generating a variable pulse width encoded signal in response to received carrier pulses and a decoder for decoding the variable pulse width encoded signal to generate the digital data signal, as is recited in claims 8 and 15, it cannot be said to anticipate claims 8 and 15. For that reason, claims 8 and 15 are deemed allowable over Miyamoto. For the same reasons given above with respect to claim 8, claims 9-11, ultimately dependent from, and further defining the invention recited in, claim 8, are also deemed allowable over Miyamoto. However, Applicant makes the following comments on the indicated claims.

Claim 9, dependent from claim 8, recites in pertinent part, "... the variable pulse width code is a variable aperture code." Because, as described above, the received signal in Miyamoto is a fixed pulse width code signal, Miyamoto cannot disclose receiving a variable pulse width signal, and cannot disclose that the received encoded signal is a variable aperture code signal. For this reason, claim 9 is deemed allowable over Miyamoto.

Claim 10, dependent from claim 8, recites in pertinent part, "... the carrier pulses have one of a first phase and a second phase." Because Miyamoto does not disclose generating carrier pulses, Miyamoto cannot disclose that the carrier pulses have a first phase and a second phase, as recited in claim 10. For this reason, claim 10 is deemed allowable over Miyamoto.

Claim 11, dependent from claim 10, recites in pertinent part, "... the first phase is substantially 180 degrees out of phase with the second phase." Because Miyamoto does not disclose generating carrier pulses, nor that the carrier pulses have first and second phases, it cannot disclose that the first phase is substantially 180 degrees out of phase with the second phase, as is recited in claim 11. For this reason, claim 11 is deemed allowable over Miyamoto.

For the reasons given above, claims 8-11 and 15 are deemed allowable over Miyamoto, and the Examiner is respectfully requested to reconsider and withdraw these rejections.

In view of the above arguments, claims 1-15 are deemed allowable. The Examiner is respectfully requested to reconsider and withdraw the rejections, and to allow the application.

Respectfully submitted,

By: _____ (DNC)
Ronald H. Kurdyla
Reg. No. 26,932
(609) 734-6818

Patent Operations
Thomson Licensing, Inc.
P.O. Box 5312
Princeton, New Jersey 08543-5312

Date: August 10, 2004

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to the Hon. Commissioner for Patents; P.O. Box 1450; Alexandria, VA 22313-1450 on:

August 10, 2004 _____
Date Linda Tindall